



**NEW BRUNSWICK'S  
PLASTICS INDUSTRY:  
Rhetoric versus Reality**



**ISAIAH A. LITVAK**

November 2003

## **Atlantic Institute for Market Studies**

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# CONTENTS

About the Author .....iv

Executive Summary .....v

Introduction .....1

Competition among Countries, Provinces, and States .....2

Plant Location Models .....6

Diamond or Paste? .....10

New Brunswick’s Plastic Products Plant Landscape .....14

Difficulties in the New Brunswick Plastics Industry .....17

Concluding Observations .....20

References .....21

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Dr. Litvak has been called on to appear before Canadian parliamentary and U.S. congressional committees. These invitations resulted from his research; in a number of cases, his work contributed to new policy initiatives, including the introduction of legislation and regulations. Dr. Litvak has served as a member of various national and international councils, committees, and task forces.

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# EXECUTIVE SUMMARY

The New Brunswick government believes that the plastics products industry could become an important engine of growth in the province's manufacturing sector. That is not going to happen.

From an insignificant base of less than 1 percent of Canada's production, New Brunswick has launched a drive to become a significant North American plastics products manufacturing region. This initiative can be attributed to recent and highly publicized findings of two plant-site consulting reports.

The reports prompted enthusiastic government news releases that were picked up by local media and plastics industry publications. One release exclaimed: "New Brunswick Tops List of 25 Prime North American Plastics Production Centres". Laudable as such an objective may be, and politically attractive as it certainly is, the exercise is yet another misguided, publicly funded effort at industrial planning.

Existing New Brunswick plastics companies cannot possibly meet the government's growth expectations. Nor is it likely that the site cost advantages the consulting reports highlighted will convince many Canadian and foreign plastics products companies to locate plants in New Brunswick, for two reasons.

First, the two consulting reports based their findings on plant characteristics that are inappropriate for the local industry. For example, one of New Brunswick's most attractive features, according to the reports, is its relatively low wage costs. Yet these consultants, like many, overestimate the value of such costs — the average plastics plant in North America employs just 50 workers, not the 90–300 that these reports assume in their models.

Second, according to the now-standard model of industrial development advanced by Harvard economist Michael Porter, New Brunswick is notably deficient in a number of the factors needed to establish a cluster of plastics products firms in the province. For example:

- Human resources are weak in many of the specialized categories the industry requires. Moreover, there is a disincentive for companies to invest in training in a region of high unemployment where many workers rely on employment insurance benefits as an important source of income, resulting in short-term job attachment.
- Knowledge resources are underdeveloped, with only a few small universities and colleges located in the province. In many areas where highly skilled workers are needed, there is a dearth of both training facilities and trainers. Capital resources are typically located out of province, and the province is physically isolated and poorly connected to the rest of the continent — for example, no major airport services key North American cities.



- Demand conditions are poor, with New Brunswick’s underdeveloped industrial base providing little in the way of a home market.
- The absence of plastics products supporting and related industries — such as resin suppliers and compounders, plastics machinery manufacturers and mould makers — limits the ability and raises the costs of local plastics products manufacturers to access the technical assistance they need.
- Firm strategies and structures are radically different for the two major types of plastics products firms found in the province: the small, owner-operated locally focused firms and the multinational, outwardly focused firms.

These fundamental deficiencies seriously undermine the prospects that New Brunswick will ever achieve prominence as a plastics products powerhouse, as the provincial government hopes.

Governments in many countries and at various levels have adopted “industrial strategies” that find them engaging in fierce and often fruitless competition to attract investment. In many cases, the price of winning is high — in terms of subsidies paid and revenues foregone. Moreover, the results frequently fall far short of such glowing promises of industrial revitalization as New Brunswick’s prediction that the province would become the “Plastic Valley of North America”.

Politicians and government bureaucrats are among those least qualified to pick industrial winners and losers. At best, they lack the specific business knowledge of the sophisticated investors they are attempting to attract. At worst, they may inadvertently create subsidized competition for existing businesses, inviting charges of favouritism. The dismal track record of such diverse countries as the United States, Japan, and Germany in identifying winning industries offers little encouragement that New Brunswick, in targeting the plastics industry, will be any more successful.



# INTRODUCTION

Rivalry among subnational governments, including those of even the smallest regions, to attract industrial enterprises and foreign direct investment (FDI) has intensified in recent years (Enright 1998). This competition has come about as a result of the devolution of powers from national to subnational governments and the recognition that multinational corporations (MNCs) are critical economic organizations through which regional policy objectives can be realized. Subnational jurisdictions are positioning themselves as ideal plant sites for MNCs, and nowhere is this trend more apparent than in Canada's provinces, which are competing against U.S. states for FDI.

This phenomenon can be attributed in significant measure to the locational site advantage that the provinces derive from the Canada-U.S. Free Trade Agreement and its successor, the North American Free Trade Agreement (NAFTA). "Locate your plant in Canada and enjoy tariff-free access to the U.S. market" is a theme that plays well in the promotional literature distributed by Canada's provincial governments. That literature often also includes data on comparative costs and taxes that attempt to show why the province in question is among the lowest-cost sites in which to establish a plant to serve North American and offshore markets.

This paper looks first at the general issue of locational site competition among subnational jurisdictions through such measures as tax incentives and industry targeting. The paper then presents, as a case study, New Brunswick's attempt to encourage the growth of a plastics products industry in that province. A number of major locational consulting reports have singled out New Brunswick as one of the most cost-attractive sites in North America in which to establish plastics products plants. Yet, despite its supposed locational cost advantage, New Brunswick lacks critical industry elements, and its plastic products industry is one of the smallest in North America. In fact, New Brunswick's plastic products industry is highly unlikely to realize the exaggerated expectations of politicians and bureaucrats.

# COMPETITION AMONG COUNTRIES, PROVINCES, AND STATES

Locational site promotion campaigns by national and subnational governments are, in large measure, driven by the need to create jobs, particularly in knowledge-based industries. Competition among nation-states, particularly in the form of policy rivalry, will likely intensify in the decades to come as governments attempt to increase their share of the resources and capabilities offered by MNCs (Dunning 1992; UNCTAD 2001). As Lester Thurow has noted, “[l]ooking backward, future historians will see...the twenty-first century as a century of head-to-head competition” (1992, 28).

This rivalry is intensifying because MNCs are able to cherry pick sites among countries and extract maximum concessions aimed at reducing location-sensitive cost factors. Competition is taking place not just among countries but also among subnational jurisdictions, on both an intranational and international level. Indeed, some of the most intensive rivalry for MNC investment dollars and jobs is occurring between Canadian provinces and U.S. states, particularly the smaller and economically weaker ones, which are trying to diversify and broaden their industrial base. This aggressive competition for FDI sometimes leads to bidding wars, waged by industrial planners and their economic development bureaucracies; their weapons are investment incentives that can take the form of outright subsidies, tax relief, and provision of infrastructure and land free of charge (Graham and Krugman 1995).

One of the more troubling competition issues involves the aggressive attempts by some provincial governments to entice existing Canadian-based companies either to move their plants from one province to another or to expand their plant operations through the establishment of new plants in another province. This type of competition can damage not only interprovincial government relations, but also relations between the provincial government and the local business community, particularly if existing companies (and business rivals) view the subsidies and support programs offered to potential new entrants as constituting competitive advantages not available to them.

Some policymakers and regional development officials express the concern that the overbidding competition among subnational jurisdictions places a heavy burden on the “winning community” by eroding its tax base (United Nations 1995). The quandary facing political leaders and bureaucrats, particularly in poorer provinces and states, is how to determine the right balance between the amount of public money that should be spent to attract the “right” FDI — that is, FDI that creates

jobs — and the amount that should be invested in education and infrastructure, where the payoff is in the longer term (Reich 1991).

The tax incentive package competition among provincial and state governments can be viewed as a kind of “prisoner’s dilemma” that benefits foreign firms at their (and the country’s) expense (Graham and Krugman 1995, 141).<sup>1</sup> This form of competitive inducement is not lost on the courted MNC, which may have been prepared to invest in other locations offering less attractive tax incentive packages. In such circumstances, the result may be a “transfer from the ‘winning’ state’s [province’s] taxpayers to the investor [MNC], who sees the transfer as a pure windfall” (ibid.).

In dealing with competitive challenges emanating from other jurisdictions, a government may adopt a response strategy that makes commitments that are too rich or too costly in the context of the proposed business investment or that are too little to induce the MNC to choose that jurisdiction. The literature on regional development and geographic locational competition is replete with examples of how governments got it wrong by being too naive or too politically driven (see, for example, Mathias 1971; McMahon 2000). As Snell (1998, 46-47) notes:

Designing incentives for specific firms in specific circumstances puts public officials in the position of double-guessing the private sector about what can succeed and what cannot....Bureaucrats are the least capable people to pick winners and losers. Firm-specific incentives can invite charges of favoritism from the public and from firms that do not receive the incentives.

Recent U.S. studies indicate that the cost per job resulting from tax breaks offered by competing states, especially to foreign firms, has been high (see Table 1). Five of the ten largest U.S. state tax-incentive packages offered between 1986 and 1997 were received by foreign MNCs. Indeed, of the five firms listed in Table 1, two are German, two are Japanese, and one is Canadian — steel producer Dofasco.

In charting where jurisdictions have got it wrong, local political factors tend to be a key driver of overcommitment to companies by government. Of particular interest is how provincial politicians have been responsible for propagating the kind of strategic images that have trapped their province in behaviour that turned out to be detrimental — such as offering “unlimited” support for high-

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1 Graham (2000, 65–66) deftly explains the “prisoner’s dilemma” in the following way:

In a prisoner’s dilemma, each party has an incentive to bid if it believes that other parties will also bid, but also, and perversely, each party has an incentive to bid if it knows that no other parties will bid. Yet if all parties bid, all are made worse off than if no one bids. Hence the best outcome for all is for all parties to agree that no one will bid. But this outcome is difficult to achieve, because each party believes that if it cheats on the agreement (and no one else does), it will come out ahead. Thus each party faces an incentive to cheat. Further, each party knows that all other parties face the same perverse incentive. Thus the likely outcome is that all parties will cheat. Indeed, because each party also knows that, if other parties cheat, it should cheat as well, each party’s best move is to cheat from the outset. The consequence is that, even if all parties understand that their mutual interest lies in no one bidding, the actual outcome will be that all bid.



**Table 1: State Giveaways — The Largest U.S. State Tax Incentive Packages, 1986 and 1997**

State	Company	Size of Package	Number of Jobs Created	Cost per Job
		<i>(US\$ millions)</i>		<i>(US\$)</i>
Alabama	Mercedes	253	1,500	168,667
South Carolina	BMW	170	1,900	89,474
Kentucky	Toyota	150	3,000	50,000
Kentucky	Dofasco	140	400	350,000
Indiana	Toyota	75	1,300	57,692

Source: Snell 1998, 12.

technology firms. Having persuaded the public to accept their vision of economic and social development goals, politicians and their bureaucrats can create an environment that becomes increasingly difficult to subsidize or diverge from. Such a situation typically produces political and psychological stress for both politicians and their senior policy advisors, and frequently results in costly mistakes in the form of irrational policymaking.

## *Industry Targeting*

Industry targeting by governments is an on-going fact of life. Countries and regions at comparable stages of economic development have a similar wish list of industries they want to promote and the type of investment they want to attract. The United States, Japan, and Germany, for example, have a decided preference for promoting the microelectronics, biotechnology, advanced materials, telecommunications, aerospace, computers plus software, and robotics industries (Krugman 1994). Regrettably for those countries' taxpayers, however, their governments have failed dismally in targeting "winning" industries (Krugman 1996), an observation that applies equally to Canada and its provinces. Business is not totally innocent either when it comes to trying to influence government to pick "winners". Industry associations actively lobby governments to target their industries as key sectors — that is, sectors deserving of special recognition and support in the form of subsidies and grants in areas such as training, trade promotion, research and development, utility rates, and transportation.

Although the plastics products industry is seldom included among the industries listed as most wanted, provincial and state government and development officials often view plastic products companies as ideal candidates for targeting, for several reasons: plastics is regarded as a replacement industry for jobs lost in other industries; the domestic growth of the plastics industry has been impressive; and plastics export potential is significant. The plastics products industry is among the

top five in the United States and Canada for both total employment and revenues. By 2000, shipments of U.S. plastics products reached US\$143 billion, and about 877,000 workers were employed in the industry (United States 2001). The industry is similarly important to the Canadian economy, with Canadian plastics products shipments valued at C\$14.9 billion in 2000 and the industry employing 87,400 workers (Margeson 2002).

These substantial numbers are made even more noteworthy by the robust growth of plastics products, with estimates ranging between 4 and 5 percent annually in both the United States and Canada for the near future — far above the average for manufacturing and well in line with levels of the past ten years or so. The industry's trade intensity<sup>2</sup> has also increased dramatically since the signing of the Canada-US Free Trade Agreement in 1989 and NAFTA in 1994. Trade in plastics products between the United States and Canada alone increased more than threefold between 1990 and 2000.

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2 “Trade intensity” is defined as exports plus imports as a percentage of the country's gross domestic product.

# PLANT LOCATION MODELS

New Brunswick's drive to become a significant North American plastics products industry location from an industry base of minor importance can be attributed to the highly publicized findings of two major plant site consulting reports, KPMG Canada (1997) and Boyd (1997).

The KPMG report analyzed the individual and combined impact of key location-sensitive cost factors for eight industries, including plastics products, in 42 cities in Canada and the United States and five European countries: France, Germany, Italy, Sweden, and the United Kingdom. The business model KPMG developed for the plastics products industry was a manufacturing operation producing moulded plastic components. The model operation was assumed to have annual sales of US\$15 million and to employ a staff of 90, working in a 100,000 square foot building located on a ten-acre site.

Based on this business model, Canada's plastics products industry had the lowest overall total locational-sensitive costs with an index of 95.4, representing a 4.6 percent advantage over the United States. Location-sensitive costs included labour, utilities, interest, depreciation, and taxes, and represented approximately 60 percent of total annual costs for the model facility. Canada also ranked first in terms of facility investment costs, primarily because of low construction costs.<sup>3</sup>

In 1997, the New Brunswick provincial government hired The Boyd Company, Inc., of Princeton, New Jersey, a high-profile location-consulting firm, to evaluate the attractiveness of the province as a plant site for plastics products manufacturing compared to other manufacturing sites in the United States. Unlike the KPMG model of 90 employees, the Boyd model targeted the major operating costs scaled to a moulded plastics products plant with 300 hourly workers located in a 100,000 square foot facility and with the plant's output shipped by road to key markets in both the United States and Canada. As with the KPMG model, Boyd used an average exchange rate for the Canadian dollar of 73 U.S. cents.

The Boyd study featured a comparative operating cost analysis of 25 plastics production sites in North America. It found that New Brunswick, the only Canadian site included, had the lowest annual operating cost, at US\$7.5 million; Los Angeles, in contrast, had the highest annual operating cost, at US\$12.7 million (see Table 2).

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3 According to KPMG, the Canadian cost advantage over the United States would hold as long as the value of the Canadian dollar remained below 83 U.S. cents. Canada would lose its cost advantage over the United States if the Canadian dollar appreciated by 14 percent, from 73 U.S. cents (the prevailing exchange rate used by KPMG) to 83 U.S. cents.

**Table 2: New Brunswick — North America’s Most Economical Workplace**

Location	Total Annual Operating Cost	Location	Total Annual Operating Cost
	(US\$ millions)		(US\$ millions)
Los Angeles, CA	12.7	Salt Lake City, UT	11.6
Boston, MA	12.4	Cincinnati, OH	11.6
Minneapolis, MN	12.4	Phoenix, AZ	11.4
Hartford, CT	12.3	Chicago, IL	11.3
Detroit, MI	12.3	Nassau, NY	11.1
Cleveland, OH	12.1	Dallas, TX	10.5
Philadelphia, PA	12.1	Akron, OH	10.5
Baltimore, MD	12.0	Atlanta, GA	10.3
Wilmington, DE	12.0	Portland, ME	10.3
Middlesex, NJ	11.9	Charlotte, NC	9.8
Milwaukee, WI	11.8	Winston-Salem, NC	9.6
Denver, CO	11.6	Greenville, SC	9.1
		<b>New Brunswick</b>	<b>7.5</b>

Source: Boyd 1997.

The two locational plant-consulting findings produced a raft of excited news reports in the local media and plastics industry publications. “Plastic? Fantastic” rang the headline of the business section of Saint John’s *Telegraph Journal* on June 13, 1997. “On the hunt for business, looking for plastics” said a front-page story in the business section of Fredericton’s *The Daily Gleaner* on June 12, 1997. A provincial government news release boasted that “New Brunswick Tops List of 25 Leading Plastics Production Centres”, and quoted the findings as reported in the August 1997 issue of *Modern Plastics*, a leading U.S. trade publication. “New Brunswick has been ranked the No. 1 location for the plastics industry, and the province intends to capitalize on it” is a theme frequently communicated by New Brunswick’s political leaders and bureaucrats. The premier of New Brunswick trumpeted that “compared with 24 prime plastics-production centres in North America, our province offers the lowest annual operating costs” (Thériault 1998, 12). An interview with a project executive in the provincial Department of Economic Development and Tourism made the key point that

Plastics manufacturing firms will fit well in all regions of the province, including those hit hard by job losses in resource-based industries... Many of the jobs require low skill level... The government has not wasted any time in making its pitch to plastics manufacturers. It has already sent lure letters and the Boyd [locational consultant] study results to approximately 5,000 American plastics companies. (Metcalf 1997.)

A major shortcoming of both the KPMG and Boyd plant models, however, is that their assumptions of 90 and 300 hourly workers, respectively, hardly reflect the size of plants that characterize the Canadian, let alone the New Brunswick, plastics products industry. The Canadian industry largely consists of privately held small and medium-size enterprises (SMEs) and is thus quite fragmented. The industry is made up of some 1400 establishments whose primary activity is the processing of synthetic resins into plastics products. Approximately 75 percent of the plants employ fewer than 50 persons; only 7.5 percent have a work force that exceeds 100 employees (Margeson 2002). The plant models are equally unrealistic for the U.S. industry, the world's largest producer of manufactured plastics products, which in 1997 consisted of 14,023 establishments, about half of them employing fewer than 20 workers. The average plant size for the U.S. plastics products industry as a whole was 46.1 production workers (Nebraska 2001). A study commissioned in 1997 by the Canadian Plastics Industry Association estimated that New Brunswick's plastics products industry consisted of approximately 40 plants with about 800 employees and accounted for about C\$150 million in sales (Litvak 1997). New Brunswick's SMEs, those with fewer than 100 employees, accounted for the bulk of industry sales.

In 1987, approximately 50 percent of all Canadian plastics products establishments were located in Ontario, 27 percent in Quebec, 11 percent in British Columbia, 10 percent in the Prairie provinces, and 2 percent in the Atlantic provinces. Based on either value of shipments or employment, about 65 percent of the overall industry and almost the entire automotive components subsector was located in Ontario. These proportions had not changed substantially by 1997. Industry Canada estimates that the industry's current breakdown remains comparable to the 1997 distribution and that New Brunswick accounts for just 1 percent of the Canadian total — hardly a resounding vote of confidence in support of the “plastic fantastic expectations” so publicly expressed in 1997. In fact, that very year, New Brunswick had a substantial plastics products trade *deficit* with imports of C\$42.6 million and exports of C\$24.7 million (Margeson 2002).

In 2002, KPMG and Boyd conducted updates of their 1997 studies. The KPMG plastics products manufacturing model was similar to the one used in 1997 — namely, a moulded products manufacturing operation with 90 employees, located in a suburban industrial plant of 100,000 square feet, with annual sales of US\$15 million. Although Canada's overall land and construction costs were the lowest of the countries surveyed, plastics ranked fourth in terms of the overall cost index of 89.0. Nonetheless, it still represented a significant 11.0 cost advantage over the United States. The United Kingdom ranked first with a cost index of 86.4 (KPMG LLP 2002).<sup>4</sup>

The 2002 Boyd study was a comparative operating-cost analysis of light manufacturing site selection that included plastics products manufacturing. The 2002 simulation model differed slightly from the 1997 model in that it was a smaller version, with operating costs scaled to a representative 75,000 square foot light manufacturing production plant with 200 hourly workers, and shipping

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4 The prevailing exchange rate KPMG used in its calculation was C\$1.546 per U.S. dollar.



over-the-road to key North American regional markets.<sup>5</sup> Despite the different model parameters between the 1997 and 2002 studies, however, the findings were remarkably similar, with total annual operating costs ranging from a high of US\$15.3 million in California to a low of US\$7.5 million in New Brunswick (Boyd 2002).

The New Brunswick government believes that the plastics products industry has the potential of becoming an important engine of growth in the local manufacturing sector. How realistic is this expectation? Current New Brunswick plastics products companies alone cannot possibly generate the government's growth expectations for the plastics products industry, however attractive the locational site advantages. Nor is it likely that the site cost advantages noted in the Boyd and KPMG reports will convince many foreign plastics products companies to locate plants in New Brunswick. Why the divergence?

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5 The 2002 Boyd study used an exchange rate of 66.7 US cents to a Canadian dollar.

# DIAMOND OR PASTE?

Michael Porter’s now-famous diamond, shown as Figure 1, represents the four elements necessary for successful industrial competitiveness: factor endowment, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry. Yet, across each of these four elements, distinct weaknesses exist in the New Brunswick plastics products industry. In fact, the general weakness of the province’s industrial base haunts every portion of the analysis.

## *Poor Factor Endowment*

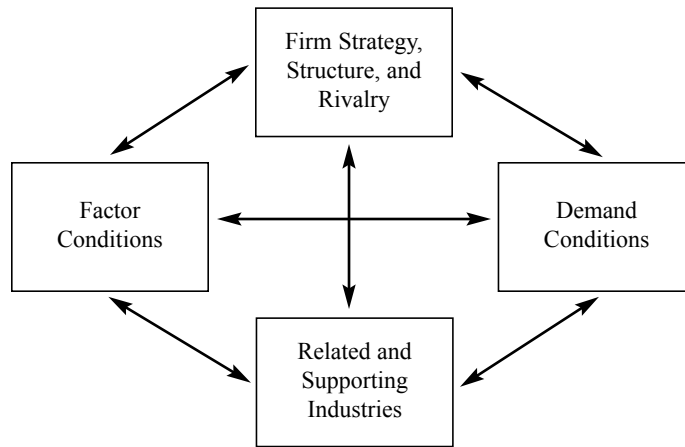
Porter suggests five categories of resources to examine in order to determine competitiveness: human resources, physical resources, knowledge resources, capital resources, and infrastructure (Porter 1980). Taking each in turn, the weaknesses of New Brunswick’s factor conditions become clear. The province’s human resource base is lacking in many categories of specialized workers increasingly needed in the plastics products industry. Indeed, the experience of business contradicts the provincial government’s contention regarding the availability of skilled workers in New Brunswick. Companies are finding it hard to recruit workers with the appropriate skills, and the shortage is expected to get worse in the coming years (Litvak 1997; Cayo 1998). Not surprisingly, government brochures accentuate the positive with reference to worker attitudes and motivation. The reality is, however, quite different. New Brunswick is a high unemployment region and, as O’Farrell notes,

In high unemployment regions, where [unemployment insurance] is a mainstay of incomes, it also has undesirable side effects by creating incentives in favour of short-term employment, maximization of unemployment benefits, and disincentives to long-term re-employment.... For employers, it discourages training investment and creation of [a] suitable workforce; and it contributes to a high labour turnover and increased training costs. (1990, 25.)

This finding was echoed on October 9, 1997, by then-outgoing New Brunswick premier Frank McKenna: “I can tell you that federal dependency is the opiate of this region, Atlantic Canada. Dependency — unemployment insurance, welfare cheques, transfer payments — have all become a narcotic to which we have become addicted”.

New Brunswick’s knowledge resources are also lacking. Only a few small universities and community colleges are located in the province. There is also an absence of local training facilities and trainers in many key skills areas, which is a definite obstacle to local training and upgrading considered essential to materials, product, and process improvements and advances. Furthermore, training is expensive in New Brunswick, and the absence of a critical mass of plastics products

**Figure 1:** *Porter’s Diamond — The Elements of Successful Industrial Competitiveness*



Source: Porter 1990.

companies, compounded by the geographic dispersion of the small base of existing operations, creates a real cost barrier for skills development and the delivery of local training programs. Enthusiasm and rhetoric notwithstanding, New Brunswick’s technology and education and training-based infrastructure in support of the plastics products industry is weak, and what is available has been minimally utilized by New Brunswick plastics products companies. Related to the issue of low awareness is the low level of collaboration between government institutions, between education and training institutions, and between the institutions and industry. Equally important is the low level of collaboration among companies in the areas of technology and training.

General mistrust by small and medium-sized firms mitigates against the sharing of information, expertise, and costs even though economies-of-scale considerations in pre-competitive areas of activity indicate that collaboration would result in win-win situations. The preponderance of SMEs, largely privately held, the geographic dispersion of the companies, and the fragmented nature of the industry have not produced the presence of shared norms and trust considered critical to facilitating coordination and cooperation among firms for their mutual advantage. Since social capital is seen to be closely linked to a capacity for networking that, in turn, is essential for tapping into the shared intelligence of the collectivity of firms within a given geographic space, New Brunswick's current industrial platform can be hardly viewed as a strength when it comes to attracting new plastics products companies.

A classic case in point is the general reluctance by local companies collectively to develop a training program that would be applicable to a group of companies, thus reducing the development costs for each company. Fears of losing competent personnel and inadvertently disclosing technical insight, not necessarily to a competitor (for example, a plastics moulder and a plastics extruder) are



just two reasons industry collaboration is hard to come by. These fears result from situations where participants from the larger plastics products companies may have attempted or succeeded in luring trained workers from SMEs by offering them more attractive compensation and benefits packages.

New Brunswick's infrastructure is considered to be relatively adequate, and the pace of life and natural beauty of the province would be pleasing to all but the most trenchant urban dweller. However, the province's capital resources are relatively meagre, since most lending institutions are based out of province. Moreover, the province's geographic location, hundreds of miles from the largest domestic and international markets, can only be termed a disadvantage. The absence of a major airport serving key centres in North America reinforces the perception of New Brunswick as a backwater, at least from the standpoint of executive and technical staff accessibility and transfer. Head offices of U.S. and European MNCs consider New Brunswick's location remote within North America.

### ***Poor Demand Conditions***

Demand conditions, the second part of Porter's diamond, are an important influence on the plastics products industry in New Brunswick. Plastic's usefulness in such a large variety of products makes it a good bellwether for the size and the diversity of a region's industrial base. Unfortunately, New Brunswick's industrial base is extremely shallow and underdeveloped. The province has a relatively small home market, with slow growth in income. It is marked by neither intense local demand nor a large number of strong competitors. Overcoming the lack of diversity in New Brunswick's industrial structure is a major impetus in the government's drive to promote the formation of new industry clusters.

### ***A Lack of Related and Supporting Industries***

The third item in Porter's diamond, related and supporting industries, is affected in much the same way as demand conditions. Strengths in certain industries naturally lead to advantages in building related industries, but the weaknesses in New Brunswick's industrial base and the shortages in relevant factors have greatly affected the presence of plastics product-related and supporting industries such as resin suppliers and compounders, plastics machinery manufacturers, mould makers, and so on, thus limiting the ability and increasing the cost for local plastics products manufacturers to readily access technical assistance critical to the manufacture of plastics products.

Regional agglomerations of firms tend to emerge when there are good opportunities for face-to-face interaction among suppliers and customers, and technical and professional work forces, and where a supportive regional infrastructure exists. Plastics products manufacturers, for example, who invest substantial money in new, advanced manufacturing equipment and machinery that incorporates sophisticated microelectronics with information technology, consider close proximity to machinery suppliers for technical assistance as a critical advantage at the new machine start-up phase.

Similarly, experimentation with new resins and compounds is easier and more effective if suppliers with technical support personnel are in close proximity. Such relationships are particularly important if the new resin material requires adjustments to be made to the machinery (for example, new dies or set-ups) and thus the involvement of the machinery supplier. Plastics products manufacturers, most of whom are SMEs and lack adequate in-house technical expertise, benefit from easy access to suppliers and customers. Such access tends to promote more interchanges and greater collaboration.

### ***Inadequate Firm Strategy, Structure, and Rivalry***

The final element of Porter's diamond, firm strategy, structure, and rivalry, is markedly different for the two major types of plastics products firms found in New Brunswick: the small, relatively weak, owner-operated plants with a domestic focus and a limited product line; and MNCs whose New Brunswick plant operations are just a small piece of their total picture and where control rests primarily out of province.

As well, geographic clustering of plants is absent since New Brunswick's small plastics products industry is geographically dispersed, a result that politics has played a major role in promoting. New Brunswick is a depressed region, and some areas within the province are more depressed than others. Consequently, elected provincial and federal politicians, especially those whose party is in power, will lobby for special grants to induce investors to locate in their ridings. For many business investors, the disadvantages associated with locating in the more depressed areas may be compensated for by the offer of additional subsidies, particularly if the investing firm is financially strapped for capital. Generally speaking, many of these firms are marginally profitable SMEs that frequently exaggerate their workforce projections in order to gain the subsidies.

# NEW BRUNSWICK'S PLASTIC PRODUCTS PLANT LANDSCAPE

In 2003, New Brunswick is home to some 35 plastic products plants: twenty-two employ fewer than 20 people; seven employ between 20 and 49; five between 50 and 99; and only one hits the 100-employee mark. None of the six largest plants is New Brunswick controlled; all are constituents of multi-plant companies headquartered in Canada (one in Quebec, one in Nova Scotia, and one in Ontario), Europe (Iceland and Finland), and Australia.

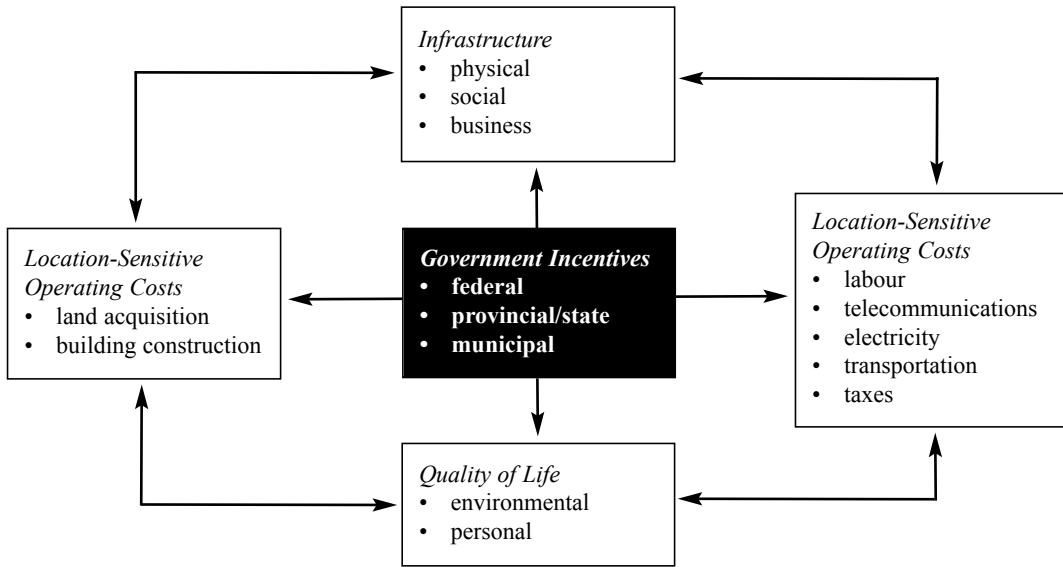
Saint John is home to approximately half of the province's plastics products industry and is dotted with a number of the larger manufacturing plants: PCL & Eastern Limited, a division of PCL Packaging Corporation, one of Canada's largest producers of plastic bags, which employs some 100 workers; SAEPLAST Canada, a rotational moulder with approximately 60 employees and a wholly owned subsidiary of an Icelandic company (the Saint John plant manufactures products for the North American market); and Wirsbo, with approximately 40 workers, controlled by Minnesota-based Wirsbo Co., a subsidiary of the Uponor Group, a Finnish company.

The other plastics products plants are scattered throughout the province. IPL Plastics Ltd., headquartered in St. Damien, Quebec, has a plant in Edmundston that specializes in the manufacture of plastics containers and is one of the larger plastics plant employers in New Brunswick. In April 2003, IPL announced an expansion of the Edmundston plant that will create 30 new jobs in the next two years with the help of a \$225,000 forgivable loan from the provincial government. Other plants with 50 or more employees include Twinpak Atlantic Inc. in Moncton, a producer of plastic bottles and controlled by Amcor of Australia; and Truefoam Limited in Fredericton, a Nova Scotia company that manufactures plastic containers and insulation products. To varying degrees, the large non-New Brunswick-controlled plants are engaged in exporting, primarily in North America. Most of the New Brunswick-owned plants, however, are not export oriented because of their small scale, insufficient resources, lack of knowledge, and a general reluctance to step outside their neighbourhood.

## *The Case of the Wirsbo Plant*

Since the release of the June 1997 Boyd Report, only one significant new MNC plant location investment has materialized in the New Brunswick plastics products industry. In February 1998, the Finnish-based Uponor Group, through its U.S. subsidiary Wirsbo Co., announced that it would build

**Figure 2: Decisionmaking Factors in Industrial Plant Location**



a 60,000-square-foot state-of-the-art injection moulding plant in Saint John. Wirsbo selected Saint John from a field of 20 North American candidates because of the “ready availability of competent workers in New Brunswick where the hourly wage is approximately \$9.00, significantly lower than in the United States, favorable utility and transportation rates, modern port facilities, and a competitive tax incentive package”. Moreover, compared to U.S. firms, European-owned companies have a decided preference for locating their North American manufacturing plants in coastal areas because of their higher propensity to import (Shaver 1998), and Finnish-based Uponor was no exception. Many of the alternative sites Wirsbo investigated were located on the Atlantic coast.

The decisionmaking factors that led Wirsbo’s management to establish its second North American plastic pipe plant in New Brunswick are illustrated in Figure 2. Location-sensitive capital and operating costs were judged on a comparative site basis, and Saint John ranked among the least costly. The infrastructure was seen to be adequate, while the quality of life was deemed superior. Incentives and support services offered by government were viewed favourably. Wirsbo’s Saint John plant services the company’s North American customers and is largely a semi-skilled, labour-intensive operation. The ready availability of such workers at lower wage rates swayed management to locate its new plant in Saint John.

As part of an overall incentive package to locate the new Wirsbo plant in Saint John, parent company Uponor received the following support from various levels of government and institutions:<sup>6</sup>

6 Interviews with officials from the New Brunswick Department of Economic Development and Tourism, and Enterprise Saint John, October 1999 and July 2000.



- a \$600,000 forgivable loan based on the promise to create 80 positions within three years, from the New Brunswick Department of Investment and Exports; a \$1,000,000 interest-free loan (for eight years), from the federal government's Atlantic Canada Opportunities Agency; an estimated \$150,000 to \$200,000 in wage subsidies, from the New Brunswick Department of Training and Employment Development;
- 12 acres of free land (with an estimated value of \$300,000), from the New Brunswick Department of Investment and Exports; free "basic" site preparation, extension of municipal services to the new building, and a civic hydro transformer (all with an estimated value of \$500,000), from the City of Saint John;
- in-kind training and research and development assistance (with an undetermined value), from the New Brunswick Community College, Saint John Campus, and the University of New Brunswick, Fredericton Campus; and
- temporary office space and project implementation support (with an undetermined value), from Enterprise Saint John.



# DIFFICULTIES IN THE NEW BRUNSWICK PLASTICS INDUSTRY

The 1997 KPMG Canada and Boyd findings influenced the New Brunswick government to add plastics to the list of target industries it should promote, and the 1998 announcement of the Wirsbo plant was seen as a harbinger of more new plant investments. To date, however, no other significant plant investment in the plastics industry has materialized. In fact, since the late 1990s, the plastics products industry has undergone major structural changes arising from corporate mergers and acquisitions, and plant expansion, retrenchment, and relocation.

In 1999, Ipex Inc., a Canadian-controlled manufacturer of pipes, tubes, and tubing employing some 50 workers in its Saint John plant, was acquired by Glynwed, a British company. In March 2001 Glynwed Pipe Systems was in turn acquired by the Belgian company Etex, which, in July of that year, announced the closing of the Saint John plant and the transfer of the manufacture of polyethylene pipes to the company's Quebec plant. Industry sources contend that the Etex plant expansion program was influenced by incentives offered by the Quebec government (Bolduc 2001). Indeed, economic competition among Canadian provinces is not unlike the "economic war" among U.S. states (Reed 1996).

Another blow to the New Brunswick plastics industry occurred in September 2002 when packaging maker Intertape Polymer Group Inc., headquartered in Montreal, announced the shutdown of its Edmundston plant, one of the largest plastics plants in the province, with some 80 employees. Intertape management explained that the company would consolidate production of flexible intermediate bulk containers at a more modern factory in Piedras Negras in Northern Mexico, mainly to realize lower costs. As a NAFTA member, Mexico enjoys tariff-free access to the U.S. market; accordingly, Intertape sought to take advantage of the significantly lower labour costs in Mexico (95 cents an hour) than in northern New Brunswick (\$13 an hour). Jean Clavette, a union spokesperson at the plant, which had been in operation for about five years, said, "the workers are losing their jobs to globalization, which was something they had scarcely considered as a threat until now".

The growth that the New Brunswick plastics products industry has seen in recent years has come primarily from the expansion of some of the larger companies' existing plants in response to export opportunities, largely to the United States. Several of the smaller, owner-operated companies have increased the size of their operations principally to meet the growing demands of local markets and, less significantly, those of adjacent provincial and U.S. state customers. In addition, a number of



small entrepreneurial entrants have cropped up in various parts of the province. In short, some growth appears to be taking place in the New Brunswick plastics products industry, but it falls far short of expectations and it hardly supports the provincial government's contention, widely publicized in 2003, that New Brunswick was becoming the "Plastic Valley of North America".

## *Down the Primrose Path*

Formulating and implementing cost-effective manufacturing strategies is critical to the competitive success of plastic products companies. At the core of this strategy is the selection of the "right" plant site. Geographic location determines not only the operating cost structure, but also the company's ability to recruit competent personnel at competitive wage rates, meet customers' just-in-time shipping requirements, obtain needed utility and transportation services to support long-term growth, access local technical expertise and services, and obtain tax and investment incentives.

There is no universal consensus among plant location consultants on the overriding attractiveness criterion. Generally speaking, tax breaks and low-interest loans play a lesser role in the decision-making process for MNCs than does proximity to customers and markets or accessibility to skilled workers at competitive rates. A good case in point is the cross-border locational site rivalries in the plastics products industry. A recent example involved LDM Technologies Inc., an injection moulder based in Auburn Hills, Michigan, which narrowed down the location of a new plant to either Tilbury, Ontario, or Romulus, Michigan, a Detroit suburb. Although both sites were considered to be excellent, the deal swung in favour of the Michigan location because of its closer proximity to customers and to the company's head office, and the excellent cooperation and support the company received from the town of Romulus and the state of Michigan, which included a US\$5.3 million tax credit from the Michigan Economic Growth Authority (Miel 2000).

Although the LDM plant location example indicates that the availability of government tax incentive packages does influence the final location outcome, it is rarely the dominant consideration, and the most attractive incentive package does not always win out. Tough bargaining with governments to extract the most attractive incentive package is usually successful when the list of favoured sites is whittled down to a few or just one. Tax breaks and related incentives are, in any case, readily available from federal, provincial, or state governments seeking to compete globally for private sector investment dollars. Plant location decisions, in the end, are made based on proximity to customers in the region, availability of a pool of skilled workers, and a solid infrastructure of suppliers and supporting organizations (King 1995).

MNCs can, by and large, obtain similar tax deals in most areas. From a corporate standpoint, the more significant strategic consideration is to settle on the right business location from a long-term perspective, because artificially created advantages through select government incentives will at some point run out. A more salient goal for the MNC is to get those incentives that will make the project less expensive once the plant location decision has been finalized (Loepp 1998). In this con-



text, the benefits to be derived from locating in regional clusters of industrial activity should not be underestimated, and is now a major string in the promotional bow of economic development authorities. A “cluster” is defined as a geographic concentration of competing and cooperating companies, suppliers, service providers, and associated institutions (Porter 1998). Krugman identifies three factors that encourage clustering: “strong economies of scale, strong forward and backward linkages, and — perhaps surprisingly — low transportation costs. This last point suggests that as the world becomes more closely integrated, production will often become more, not less, geographically clustered” (1994, 438).

A quick Internet survey of U.S. industry clusters provides numerous state and regional industry cluster web sites. Most have one feature in common: the use of Porter’s diamond framework. South Carolina, which is home to a well-established and growing plastics industry cluster, is an interesting example of this phenomenon. The profit-enhancing features for South Carolina plastics products manufacturers include a quality-focused work force supported by world-class training programs, leading research facilities, and a pro-business operating environment. As Kanter (1995, 151) notes,

Contrary to popular belief, low wages or tax incentives were not the primary reason the first foreign companies were attracted to South Carolina's upstate region...[R]ecent studies have shown that state and other local tax incentives play little or no role in where foreign companies locate their businesses in the United States.

Customized technical training of prospective workers and supervisors for firms that bring new investment to South Carolina, subsidization of such training even if it is obtained out of state, and the presence of first-rate technical schools are among the more important reasons European and Japanese firms with high technical and quality standards have invested in establishing plastics products facilities in that state.

It is, therefore, not surprising that, even though trade barriers in the plastics products industry have been largely removed as a result of NAFTA, MNCs by a very large margin continue to favour locating their operations in the United States around existing centres of concentration (Enright 1998).

## CONCLUDING OBSERVATIONS

Attempts by governments to develop industry clusters have not produced many successes (see, for example, Heuser, Kraljic, and Stuchtey 2000). Simple tax breaks offered to investors will likely be matched by governments in other jurisdictions. Thus, tax breaks, in and of themselves, do not offer one province a competitive advantage over other provinces or U.S. states (Swenson 1998). Instead, bidding wars frequently ensue among a variety of governments, which affect the direction of investment and also often involve the profligate use of taxpayers' dollars. While much effort and public resources are spent on location site promotion, the strategies governments employ are often based on a very simplistic understanding of what makes certain locations competitive.

However potentially cost attractive New Brunswick may be for plastics companies as presented by locational site consultants, the province is not likely to realize the optimistic expectations of many of its politicians and bureaucrats. The plastics products manufacturing plant models developed by the consulting firms for site cost comparison purposes are unrealistic, and the industry conditions that typically attract plastics companies are weak, if not absent, in New Brunswick.

Low wages and tax incentives are not the primary reasons companies are attracted to a particular province or state. Access to a skilled work force — one that can meet international standards, be it in low- or high-tech industries — is critical. Ultimately, however, it is the quality of the total business environment that determines the company's location decision. A skilled and well-educated work force, proximity to markets, and a high-quality and cost-efficient infrastructure not burdened by excessive regulatory red tape or relatively high tax rates are among the more valuable elements in attracting sound business investment, rather than government handouts that are frequently short lived, market distorting, and of questionable value to the community at large. The application of Porter's diamond framework clearly demonstrates that attempting to create a plastics industry cluster without regard to the local context is doomed to fail. The New Brunswick case study shows clearly that policymakers must exercise judgment and caution when it comes to drawing inspiration from the findings of location site consulting reports, particularly if the reports are commissioned by the government of the day. A major lesson to be learned from the New Brunswick case study is that market forces, not government bureaucrats and their political masters, will ultimately determine the outcome of locational site competitions.

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